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ABSTRACT

This study examined the effects of children's cognitively based role expectations on their judgments of the grammatical acceptability of sentences. Sixty children, 12 each in grades 4 through 8, individually heard 10 sentences violating the Minimum Distance Principle (MDP). The sentences were grammatical, but linguistically complex, and violated the children's expectations. Children were asked a comprehension question, asked whether the sentence was acceptable, and asked to identify any aspect of the sentences that was unacceptable. Children's responses yielded 4 categories of unacceptable elements: structure, agent, verb tense, and promise. Grade level was not a significant source of variance. Expectations affected judgments, thus lending support to interest among psycholinguists in extra-linguistic variables in sentence processing. Care should be taken to design materials controlling for the non-syntactic aspects of children's expectations so that such factors do not confound the measurement of syntactic acquisition.
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Extra-linguistic Control of
Judgments of Grammatical Acceptability
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Children's judgments of the acceptability of sentences with a complex grammatical structure and the effects of their role expectations on these judgments were investigated. 60 Ss, with 12 each in grades 4 through 8, individually heard 10 sentences violating the MDP, e.g., The boy promises the father to set the table. After demonstrating comprehension, Ss evaluated the acceptability of the sentences. Differences due to grade were not significant. Sentences reflecting Ss' expectations were more acceptable than sentences contradicting expectations. The grade by expectation interaction was also significant. Implications are related to several areas of theoretical interest in developmental psycholinguistics.

Extra-linguistic Control of
Judgments of Grammatical Acceptability

RATIONALE AND PROBLEM

Judgments of the native speaker regarding the acceptability of sentences have provided a rich source of information for investigation by generative grammarians over the past 15 to 20 years. Interest in such judgments has been due primarily to Chomsky's (1961) statement that an adequate grammar must account for sentences acceptable to the native speaker. Two recent experiments, with adults as Ss, have demonstrated that training in generative grammar (Spencer, 1973) and experience in teaching sentence diagramming (Hoenigmann and Wildemann, 1976) facilitated judgments of acceptability and grammaticality, respectively. The present study differed from these 2 in employing younger Ss and in examining the effects of children's cognitively-based role expectations on their judgments of the grammatical acceptability of sentences.

PROCEDURES

60 children, with 12 each in grades 4 through 8, individually heard 10 sentences violating the Minimum Distance Principle (cf. Rosenbaum, 1967), e.g., The boy promises the father to set the table. 5 sentences reflected the children's previously identified role expectations, in that the more probable agent was the grammatical subject of the sentence; such sentences were referred to as harmonious with expectation. An additional 5 sentences contradicted children's expectations, in that the agent they had earlier identified as

less likely was the grammatical subject of the sentence; these sentences were referred to as contrary. All 10 sentences were, in fact, grammatically correct. However, the harmonious sentences contained messages that agreed with children's expectations about the more probable agent/action match, whereas the contrary sentences contained messages running counter to children's expectations.

Thus, all 10 sentences were linguistically complex, having an atypical syntactic structure which constitutes the only exception to the general pattern in English described by the Minimum Distance Principle, and, of the 10, 5 were high in psychological complexity (contrary to expectation) and 5 were low in psychological complexity (harmonious with expectation).

Method

Each subject was tested individually. He or she heard, and was also allowed to look at, 10 sentences violating the Minimum Distance Principle, e.g., "The girl promises the boy to feed the dog." After the presentation of each item, the child answered a comprehension question, e.g., "In that sentence, who feeds the dog?" Comprehension was verified: in the 600 measures, only 7 errors occurred. Each child then evaluated the acceptability of the sentences in terms of whether they "sounded right" and resembled everyday speech. Next, subjects were asked to identify any aspect of the sentences that was unacceptable.

Because there was essentially no variability in the comprehension scores, this factor was omitted from the statistical analysis. The resulting design was a 5 x 2 (grade by expectation) ANOVA.

RESULTS

Grade was not a significant source of variance. That is, the mean number of sentences judged to be acceptable did not differ significantly from grade to grade. Expectation, i.e., whether items were harmonious with or contrary to children's role expectations, affected judgments of acceptability, $F(1, 55) = 57.26, p < .001$. More harmonious items were considered acceptable: mean = 3.23 versus 1.50 for contrary sentences. The grade by expectation interaction was also significant, $F(4, 55) = 2.90, p < .05$. This interaction was investigated using Tukey's A procedure (cf. Winer, 1971). There were no

Insert Figure 1 about here

significant grade differences in judgments regarding the acceptability of contrary sentences; however, Ss in grades 5, 7, and 8 judged fewer harmonious sentences acceptable than did children in grades 4 and 6. Additionally, there was a significant difference in judgments of acceptability between the harmonious and contrary conditions in the youngest 3 grades, but not in grades 7 and 8. Seventh and eighth graders considered the fewest sentences acceptable generally (means = 1.83 and 2.00, respectively). Thus, the extra-linguistic variable defined by Ss' role expectations was found to influence decisions regarding the acceptability of sentences, but not to affect comprehension by Ss in grades 4 through 8.

Children's responses yielded 4 categories of unacceptable elements:

structure (22%), agent (46%), verb tense (12%), and the promise itself (20%). Relative frequencies were significantly different in the harmonious and contrary conditions, but not among the 5 grades. Generally, in the harmonious condition, the promise was the most disturbing element. Children did not think that people would promise to carry out some of the tasks, but would simply complete them or say that they would. "The child promises the teacher to go outside to play" was often unacceptable for this reason. Many subjects stated that children would want to go out, and indicated that they would promise only if the action required were undesirable.

In the contrary condition, the agent was the most unacceptable element for all but the seventh graders, who objected more to the structure. The result that the agent was the most disturbing aspect of the contrary sentences provides further substantiation of the fact that expectation has psychological reality in children's processing of sentences. The agent in the contrary condition was more unacceptable than all aspects of the harmonious condition combined, as well as being more unacceptable than all other aspects in the contrary condition.

No statistically significant differences were found between the harmonious and contrary conditions or among the 5 grades with respect to the unacceptability of either structure or tense. Subjects who were bothered by tense--the present--were disturbed by the implication of ongoing action. Generally they preferred the imperfect or, rarely, the present perfect or past perfect.

DISCUSSION

The significance of expectation in affecting judgments of acceptability means that a decision that might appear to be a matter of evaluating the correctness of syntax alone is, in practice, complicated by other, non-syntactic considerations. The extra-linguistic variable defined by Ss' role expectations exerted stimulus control over Ss' judgments. This result lends support to the current interest among many psycholinguists in identifying and examining the importance of extra-linguistic variables in sentence processing. Additionally, the result extends the age range during which extra-linguistic variables are thought to be most salient.

Expectation was found to be multi-dimensional. Subjects had expectations about probable agents for specific actions, about situations in which people would be likely or unlikely to make promises, and about which people would make promises. Also, they thought certain substitute verbs (e.g., ask, tell, say) were more appropriate to the propositions in the stimulus sentences. All of these dimensions of expectation affected subjects' judgments of acceptability, but no longer affected comprehension in this age group. Thus, the role of such psychosemantic constraints as expectation in language performance changes with the maturity of the individual.

Older children and young adolescents, who do comprehend this derivationally complex structure, still do not find it acceptable. Thus, judging a complex grammatical structure to be acceptable may be a more difficult and advanced aspect of language development than is comprehending sentences of that same

structure. Furthermore, the reasons why subjects found the sentences unacceptable were related not only to syntax (structure and tense), but also to cognitive and semantic constraints (agent and the verb promise).

It has been suggested that the data generated when young children are asked to judge the acceptability of sentences are less reflective of their linguistic competence than data from tests of comprehension (Brown, 1973). On the basis of the present research, it appears that older children and young adolescents also achieve lower scores on measures of acceptability than on measures of comprehension (viz. 47% versus 99%). However, rather than considering the test of acceptability as less sensitive, researchers might view it as a potentially useful measure with Ss who already comprehend a given grammatical structure. Further research may uncover developmental trends in judgments of acceptability.

The concept of "mastery" of a syntactic structure is in need of revision; it is a concept requiring a richer definition than implied by comprehension alone. The fact that not all sentences were accepted, although they were understood, may mean that late childhood and early adolescence is a time when linguistic competence is still growing. That is, grades 4 through 8 may be a time when individuals are still in the process of internalizing a model of "well-formedness" for sentences of this structure. The relatively low rate of acceptability of the stimulus sentences may indicate that older children and young adolescents are refining their knowledge of grammar so that a complete model includes non-syntactic aspects of language such as expectation.

In particular, the fact that so few sentences contrary to Ss' expectations about usual agent/action relations were accepted suggests an increasing sensitivity to rather subtle aspects of sentences affecting whether they are considered well-formed.

Finally, the results have implications for the construction of stimulus materials in future research. This type of sentence has been widely investigated in studies of children's acquisition of syntax (see, for example, Chomsky, 1969; Gowie & Powers, in press; Kramer, Koff, & Luria, 1972). However, certain non-syntactic aspects of these sentences are disturbing to Ss in grades 4 through 8. Care should be taken to design materials controlling for the non-syntactic aspects of children's expectations so that such factors do not confound the measurement of syntactic acquisition.

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